# **Catalogue of useful training/guidance material relating to automated observations**

Much of the following can also be found as individual documents on the WMO Knowledge Sharing Portal Web Portal

<https://community.wmo.int/activity-areas/imop/knowledge-sharing-portal>

Some of the information on the Portal are not specifically related to WMO activities but are worth considering when transitioning to automated weather stations.

The following tables are broken into four groups:

1. WMO manuals and guides
2. Some overreaching WMO guidance and training requirements
3. Some training courses and lecture notes
4. Some links to training portals.

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| Generic Material |
| WMO Manuals and Guides |
| GCOS-226 GCOS Surface Reference Network (GSRN): Justification, requirements, siting and instrument options | 2019 | <https://library.wmo.int/doc_num.php?explnum_id=6261> |
| IOM-19 Some general considerations and specific examples in the design of algorithms for Synoptic AWS (WMO/TD – No. 230) | 1987 | <https://library.wmo.int/doc_num.php?explnum_id=9486>This may be old but it is an excellent read. The explanation is at a very basic level and ideal for our target audience. |
| IOM-119 Guidance on Computation of Calibration Uncertainties | 2015 | <https://library.wmo.int/doc_num.php?explnum_id=7363> |
| IOM-126 MeteoSwiss Classification Procedure for Automatic Weather Stations | 2017 | <https://library.wmo.int/doc_num.php?explnum_id=3719> |
| WMO-No. 8 Guide to Instruments and Methods of Observation (2018 update)(Specifically, Vol V, Chapter 5) | 2018 | <https://library.wmo.int/index.php?lvl=notice_display&id=12407#.XYQIZ25uJaQ> |
| WMO-No. 488 Guide to the Global Observing System  | 2017 | <https://library.wmo.int/index.php?lvl=notice_display&id=12516#.XYQJZG5uJaQ> |
| WMO-No. 1083 Guide to the Implementation of Education and Training Standards in Meteorology and Hydrology Vol 1  | 2015 | <https://library.wmo.int/index.php?lvl=notice_display&id=10770#.XYQLDG5uJaQ> |
| WMO-No. 1100 Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services and Other Relevant Service Providers | 2017 | <https://library.wmo.int/doc_num.php?explnum_id=4141> |
| WMO-No. 1114 Guidelines for Trainers in Meteorological, Hydrological and Climate Services | 2013 | <https://library.wmo.int/index.php?lvl=notice_display&id=15292#.XYQLiG5uJaQ> |
| WMO-No. 1133 Capacity Development Strategy and Implementation Plan | 2015 | <https://library.wmo.int/index.php?lvl=more_results&autolevel1=1#.XYQLpG5uJaQ> |
| WMO-No. 1160 Manual on the WMO Integrated Global Observing System (Annex VIII to the WMO Technical Regulations) (2019update) | 2019 | <https://library.wmo.int/index.php?lvl=notice_display&id=19223#.XYQL_25uJaQ> |
| WMO-No. 1165 Guide to the WMO Integrated Global Observing System | 2019 | [https://library.wmo.int/doc\_num.php?explnum\_id=10040](https://aus01.safelinks.protection.outlook.com/?url=https%3A%2F%2Flibrary.wmo.int%2Fdoc_num.php%3Fexplnum_id%3D10040&data=02%7C01%7CAndrew.Harper%40niwa.co.nz%7C89939a38bc174fe88aad08d77f03aa43%7C41caed736a0c468aba499ff6aafd1c77%7C0%7C1%7C637117526098852856&sdata=e5WAJu1k8Dx6O4%2Bvuunuhxvm1WGx%2BUn%2F%2BYqRqX1DOuY%3D&reserved=0) |
| WMO-No. 1192 WIGOS Metadata Standards | 2019 | <https://library.wmo.int/index.php?lvl=notice_display&id=19925#.XYQMOW5uJaQ> |
| WMO-No. 1195 Guidelines on the Role, Operation and management of National Meteorological and Hydrological Services | 2017 | <https://library.wmo.int/index.php?lvl=notice_display&id=20172#.XYQMYG5uJaQ> |
| WMO-No. 1202 Challenges in transitioning from conventional to automatic met observing networks for long term climate records | 2017 | <https://library.wmo.int/index.php?lvl=notice_display&id=20154#.XYQMjW5uJaQ> |
| WMO-No. 1205 Guide to Competency | 2018 | <https://library.wmo.int/index.php?lvl=notice_display&id=20181#.XYQMwG5uJaQ> |
| WMO-No. 1243 Vision for the WMO Integrated Global Observing System | 1243 | <https://library.wmo.int/doc_num.php?explnum_id=10278> |
| WMO-No. 1378 Guidelines for managing changes in climate observation programmes | 2007 | <https://library.wmo.int/index.php?lvl=notice_display&id=10469#.XpYGBNIzbcd> |
| WMO-No. 1380 Members Training Requirements, Opportunities and Capabilities in Meteorology and Hydrology: WMO Survey 2006 | 2006 | <https://library.wmo.int/doc_num.php?explnum_id=5289> |
| WMO Background Information |
| ETR-21 Status of Human Resources in NMHSs | 2017 | <https://library.wmo.int/doc_num.php?explnum_id=4184> |
| ETR-24 A Compendium of Topics to Support Management Development in National Meteorological and Hydrological Services | 2018 | <https://library.wmo.int/doc_num.php?explnum_id=5647> |
| ETR-25 Developing Meteorological and Hydrological Services through WMO Education and Training Opportunities | 2020 | <https://library.wmo.int/doc_num.php?explnum_id=10263> |
| Regional Training Centre courses  |  |  |
| WMO Library: Topic Capacity Development |  | <https://library.wmo.int/index.php?&lvl=categ_see&id=10075&main=1&id_thes=2#.XYQKJ25uJaQ> |
| WMO Trainer Resources Portal |  | <https://etrp.wmo.int/course/view.php?id=30> |
| WMO Global Campus |  | <https://library.wmo.int/index.php?lvl=etagere_see&id=157#.XYQJzG5uJaQ> |
| Specific Training Material |
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| WMO-No. 551 Lecture Notes for Training Class 2 and Class 3 Agricultural Meteorological Personnel | 1980/2001 | <https://library.wmo.int/doc_num.php?explnum_id=1046> |
| WMO-No. 622 Compendium of Lecture Notes on Meteorological Instruments for Training Class III and Class IV Meteorological Personnel Vol 1 Part 1 – Meteorological Instruments Part 2 – Meteorological instrument maintenance workshops calibration laboratories and routines. | 1986 | <https://library.wmo.int/index.php?lvl=notice_display&id=7563#.XYQQ8G5uJaQ> |
| WMO-No. 622 Compendium of Lecture Notes on Meteorological Instruments for Training Class III and Class IV Meteorological Personnel Vol 2 Part 3 – Basic electronics for the meteorologist | 1986 | <https://library.wmo.int/index.php?lvl=notice_display&id=7564#.XYQRBG5uJaQ> |
| WMO-No. 862 Guidance on Automatic Weather Systems and their Implementation (IOM-65) Part 2 – Implementation and User Training Considerations | 1997 | <https://library.wmo.int/index.php?lvl=notice_display&id=11269#.XYQRdW5uJaQ> |
| WMO-No. 1219 An International Agenda for Education and Training in Meteorology and Hydrology | 2018 | <https://library.wmo.int/doc_num.php?explnum_id=4626> |
| WMO/TD-No. 1306 Training material on Metrology and Calibration (IOM-86) | 2006 | <https://library.wmo.int/index.php?lvl=notice_display&id=9266#.XYQSHW5uJaQ> |
| WMO/TD-No. 1307 Training material on Automated Weather Observing Systems (IOM-87) | 2006 | <https://library.wmo.int/index.php?lvl=more_results&autolevel1=1#.XYQSP25uJaQ> |
| Manual on Instrumentation and Operations for Automatic Weather Stations for Agrometeorological Application | 2000 | <https://library.wmo.int/doc_num.php?explnum_id=6341>WMOInstitute of Agrometeorology and Environmental Analysis for Agriculture – Research National Council (IATA)Regional Meteorological Training Center (CNR)(Includes Workbook)  |
| Training Platforms |
| WMO Education and Training Programme (Moodle Site) |  | <https://etrp.wmo.int/> |
| WMO Knowledge Sharing Portal |  | <https://community.wmo.int/activity-areas/imop/knowledge-sharing-portal> |
| Eumetcal – Meteorological Education and Training within Europe portal |  | <https://eumetcal.eu/en/Home/Homepage> |
| COMET – University Corporation for Atmospheric Research (UCAR) |  | <http://www.comet.ucar.edu/index.php>Specifically MetEd portal for training<https://www.meted.ucar.edu/index.php>  |
| Pacific Meteorological Desk and Partnership – Secretariat of the Pacific Regional Environment Program (SPREP)  |  | <https://www.pacificmet.net/rcc/training>  |
| U.S. National Weather Service Training Portal |  | <https://training.weather.gov/> |
| There are others such as the Caribbean Institute for Meteorology and Hydrology but they link back to the above links. |